# Insights

*A publication of the Ontario Forest Research Institute*

Ontario Forest Research Institute
OFRI-IRFO


## *Seeing the forest as well as the trees*

*By David DeYoe, OFRI General Manager*

Over the last 25 years, Ontarians have become increasingly concerned about natural resource management. In the late '80s, they began to express these concerns in more vocal, and occasionally violent, ways. Old growth, wilderness, and forest diversity, productivity and health became focal points. As a result, the Ministry of Natural Resources began developing a new approach to forest land use planning and management: looking at the whole forest, not just the trees.

At OFRI, this meant bringing in landscape ecologists to "scale up" and look at the "big picture" – the *landscape* view. The landscape view has revolutionized how we perceive the forest – how it functions and what factors are important to help us achieve collective goals for a sustainable forest resource. Using advanced computer technology like that described in the following article, OFRI scientists have brought the forests of Ontario to the desks of the resource managers and policy analysts, where they can assess societal and economic values in the context of ecological sustainability at broader scales. Planning at broader scales allows us to design resource-use strategies that minimize the risk of human disturbance at smaller scales. The landscape approach, drawing on disciplines like ecology, genetics, geology and climatology, provides the framework.

The challenge for the future: Translating and using data from all scales – from genes to forest stands to landscapes and beyond – so information acquired locally can be assessed from a regional, national or global perspective, and vice versa. As stewards of Ontario's natural resources, we must see the forest as well as the trees.


**Volume 2, Number 2**
**Spring 1997**


### *In this issue . . .*


**New computer tools help resource professionals "see" forest landscapes ...2**

**The more a seedling glows, the better it grows .............4**

**Why are criteria and indicators getting so much attention? ................4**

**Using site-preparation alternatives to restore a Great Lakes-St. Lawrence conifer forest ......................6**

**OFRI to co-host international vegetation management conference: .........................7**

**Update on OFRI's future...8**

**Upcoming Events ..............8**


*Cette publication technique n'est disponible qu'en anglais*

# New computer tools help resource professionals "see" forest landscapes

*By Abigail M. Obenchain*

OFRI is releasing 2 new tools for understanding, modelling and predicting ecological patterns and processes at the landscape scale: the ***Hierarchical Ecological Framework (HEF)*** and the ***Ontario Fire Regime Model (ON-FIRE).*** HEF and ON-FIRE will help resource professionals create policies and plans that sustain Ontario's forests at all scales, says landscape ecologist Ajith Perera.

## *Why study landscapes?*

> *When one tugs at a single thing in nature, he finds it attached to the rest of the world.* – **John Muir**

In the past, most forest research looked at individual trees or stands of trees covering no more than a few hundred hectares. However, to achieve the MNR's goal of ecological sustainability, we must understand how all living things are interconnected in communities called *ecosystems*, which exist at various scales, just as people are part of not only families but also neighbourhoods, cities, counties, provinces, and countries.

Climate is an example of an ecological process that affects ecosystems differently at different scales: At the microsite scale, the air temperature right around individual seedlings affects their water intake; at the ecoelement scale, the climate of a forest stand can vary depending on the number of large trees left after harvest; and at the ecoregion or *landscape* scale, growing season length and average annual air temperature help determine where in the province each species will grow *(See Figure 1). Landscape-scale* information is the piece of the puzzle that helps ensure we sustain all our tree species – in their natural communities – across Ontario.

## *Forest research expands to the computer lab*

"I am often asked why I have no field crews out collecting data in the bush," Perera says. "I explain that we are not conducting site-level research; we do our work in a computer lab, working with spatial data at coarser scales."

Using the latest technology, OFRI researchers download data from high-resolution digital air and satellite photos, forest resource inventory and other maps, and historic data sets. They then use a geographic information system (GIS) to store, layer, analyze, and display this spatial data at various scales. They also create software packages like HEF and ON-FIRE that perform specialized landscape-analysis tasks. In addition, they conduct workshops to train resource policy-makers and managers, land-use planners, and MNR science and technology unit staff to use the software.

## *HEF: a standard ecological structure for Ontario*

HEF is a sophisticated computer tool for classifying ecosystems at coarser scales. This software organizes and displays the province as a *hierarchy* that resembles an upside-down tree with 3 levels of branches: ecoprovinces, ecoregions, and ecodistricts. Eventually, it will be linked at the ecosection scale to the Forest Ecosystem Classification System's ecosite and ecoelement scales. What's more, HEF nests into a broader Canadian hierarchy developed by the Canadian Committee on Ecological Land Classification.

Researchers created HEF by 1) synthesizing existing maps and knowledge of Ontario's ecology and geoclimatic characteristics (climate, terrain, geology, vegetation and soils) into a detailed, integrated GIS map of the province; 2) dividing the province into ecoregions, ecodistricts, and ecosections, based on known ecological boundaries rather than on administrative borders; and 3) adding a computer model that can predict and illustrate the *primary productivity* or net growth of the vegetation in a given land area, depending on its geoclimatic characteristics.

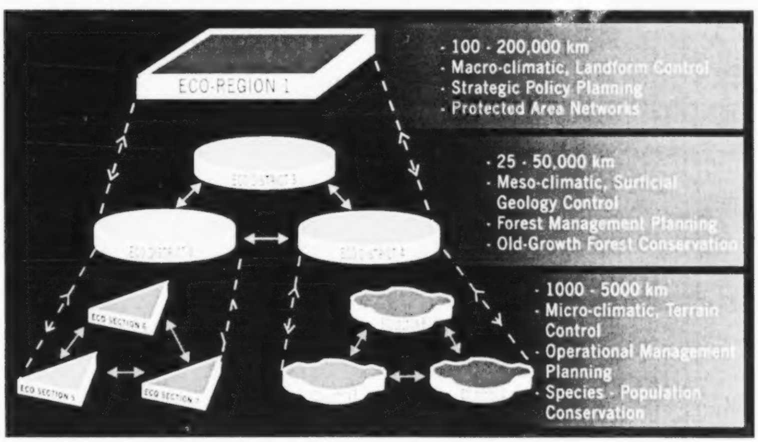


***Figure 1.*** *Example of a hierarchical framework.*

# *New computer tools help resource professionals "see" forest landscapes*

*By Abigail M. Obenchain*

OFRI is releasing 2 new tools for understanding, modelling and predicting ecological patterns and processes at the landscape scale: the ***Hierarchical Ecological Framework (HEF)*** and the ***Ontario Fire Regime Model (ON-FIRE).*** HEF and ON-FIRE will help resource professionals create policies and plans that sustain Ontario's forests at all scales, says landscape ecologist Ajith Perera.

## *Why study landscapes?*

> *When one tugs at a single thing in nature, he finds it attached to the rest of the world.* – **John Muir**

In the past, most forest research looked at individual trees or stands of trees covering no more than a few hundred hectares. However, to achieve the MNR's goal of ecological sustainability, we must understand how all living things are interconnected in communities called *ecosystems*, which exist at various scales, just as people are part of not only families but also neighbourhoods, cities, counties, provinces, and countries.

Climate is an example of an ecological process that affects ecosystems differently at different scales: At the microsite scale, the air temperature right around individual seedlings affects their water intake; at the ecoelement scale, the climate of a forest stand can vary depending on the number of large trees left after harvest; and at the ecoregion or *landscape* scale, growing season length and average annual air temperature help determine where in the province each species will grow *(See Figure 1). Landscape-scale* information is the piece of the puzzle that helps ensure we sustain all our tree species – in their natural communities – across Ontario.

## *Forest research expands to the computer lab*

"I am often asked why I have no field crews out collecting data in the bush," Perera says. "I explain that we are not conducting site-level research; we do our work in a computer lab, working with spatial data at coarser scales."

Using the latest technology, OFRI researchers download data from high-resolution digital air and satellite photos, forest resource inventory and other maps, and historic data sets. They then use a geographic information system (GIS) to store, layer, analyze, and display this spatial data at various scales. They also create software packages like HEF and ON-FIRE that perform specialized landscape-analysis tasks. In addition, they conduct workshops to train resource policy-makers and managers, land-use planners, and MNR science and technology unit staff to use the software.

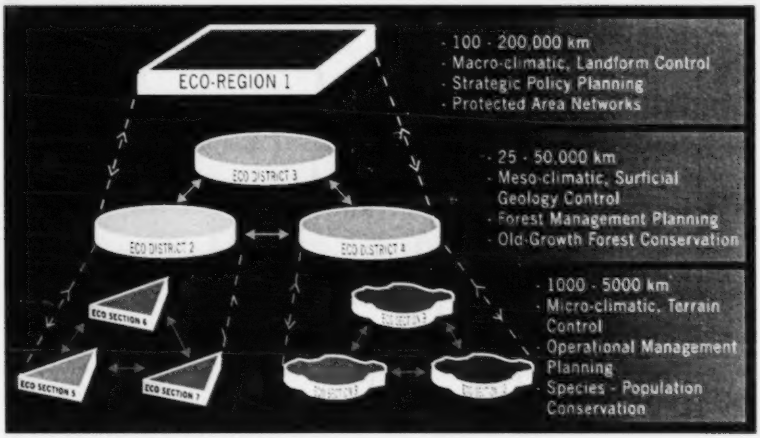


***Figure 1.*** *Example of a hierarchical framework.*

## *HEF: a standard ecological structure for Ontario*

HEF is a sophisticated computer tool for classifying ecosystems at coarser scales. This software organizes and displays the province as a *hierarchy* that resembles an upside-down tree with 3 levels of branches: ecoprovinces, ecoregions, and ecodistricts. Eventually, it will be linked at the ecosection scale to the Forest Ecosystem Classification System's ecosite and ecoelement scales. What's more, HEF nests into a broader Canadian hierarchy developed by the Canadian Committee on Ecological Land Classification.

Researchers created HEF by 1) synthesizing existing maps and knowledge of Ontario's ecology and geoclimatic characteristics (climate, terrain, geology, vegetation and soils) into a detailed, integrated GIS map of the province; 2) dividing the province into ecoregions, ecodistricts, and ecosections, based on known ecological boundaries rather than on administrative borders; and 3) adding a computer model that can predict and illustrate the *primary productivity* or net growth of the vegetation in a given land area, depending on its geoclimatic characteristics.

Perera says HEF will become available by the end of the summer and will include a UNIX-based CD-ROM, paper maps, and a user's guide. It will help resource professionals by providing:

- **A *standard* ecological structure and language.** Thus scientists working in one ecoregion can apply their results to other similar regions or compare results of similar studies in different areas.
- **A *nested, multi-layered hierarchical* structure.** The "nesting" feature allows planners to zoom in and out to look at an area of land at different scales, cut out unnecessary detail at broader scales, and improve planning efficiency. It also allows local, regional and provincial planners to coordinate their objectives, and scientists to pick the right number and type of research plots, depending on the scale of their research. The multi-layering lets users pull all the data together in one place, instead of having to sort through different maps for seed zones, diversity, harvest patterns, roads, etc.
- **An *ecologically based* classification system.** HEF will help make ecological sustainability the foundation of all forest planning and management because it is based on not just geoclimatic characteristics but also *net primary productivity* – one of the most important indicators of sustainability.

According to Jim Baker, a HEF collaborator and MNR ecologist based in Peterborough, it is important to be realistic about what you can expect from computer models like HEF. "It doesn't give us the real world," he says. "But it can give us more realistic expectations."

Perera agrees. "HEF can provide guidance for questions we can't answer any other way, but you must have your objectives in place, know what information to put in, have the appropriate background to interpret what comes out, and use the results in the proper context."

## *ON-FIRE: Emulating natural forest-fire patterns*

> *If you take nature's pattern and put it on the landscape, you will increase the likelihood of sustaining communities that evolved with that pattern.*
> – **John McNicol**

The Ontario Fire Regime Model, or ON-FIRE, can predict natural fire regimes based on real or hypothetical forest landscapes. "This is very exciting new technology," says Perera. "For the first time we have a way to understand natural disturbance at a larger scale. It will be an important tool for land-use planners. Although we can never completely understand natural systems, this model is certainly a huge improvement over looking at historical records, which are mostly anecdotal and are not verifiable or predictive."

OFRI scientist Chao Li, who created the model, stresses that it predicts at the landscape scale over long periods of time; it does not predict fire behaviour at the site level. "It is the stand-replacing fires that construct the landscape," Li says. "Understanding these is critical to understanding forest sustainability."

Li explains that the model predicts the probability of an area of land burning during a specified time period based on variables such as climate, stand age, fire history, etc. It does not predict stand-level fire behaviour, although models that do so can be nested into ON-FIRE. Uses for ON-FIRE include:

- ***Determining harvest guidelines that more closely emulate natural disturbance***, says MNR EA wildlife specialist John McNicol, based in Thunder Bay. In other words, how big should clearcuts be, how often should they be done, and in what pattern should they occur on the landscape? He notes that in some cases, the "species" approach to timber harvesting guidelines has resulted in fragmented, unnatural landscape patterns. Today, emulating natural disturbances and landscape patterns is required by the Crown Forest Sustainability Act.
- **Setting timber harvest and wildlife habitat goals** that reflect the chance of rare but catastrophic fire events at all planning scales.

To improve our ability to understand and model natural disturbance, Li has been working with the Canadian Forest Service to combine ON-FIRE with an insect disturbance model. He points out that scientists need to determine how well harvesting mimics the effects of fire and that non-scientific factors affect the setting of harvest guidelines. "This model provides the upper range of disturbance possibilities. The public would never accept the natural rate of disturbance."

ON-FIRE will be available this summer as a Unix-based CD-ROM with a user's guide (a PC version is in the works). OFRI has produced several other landscape analysis tools, including a GIS-based ranking system for old-growth red and white pine *(GRASP)* and a landscape diversity analysis tool *(LEAP)*. To request a list of landscape ecology reports and tools, call OFRI's publication request line at (705)946-2981, ext. 271, or e-mail ofriin@gov.on.ca.

***Project contact:*** *Ajith Perera.* ***Collaborators:*** *MNR's Forest Management Branch; MNR's science and technology units; Canadian Forest Service; University of Guelph; University of Toronto; Watershed Solutions, a private firm.*

## *Why are criteria and indicators getting so much attention?*

*By Abigail M. Obenchain*

In 1992, the Rio Declaration on Environment and Development called on governments around the world to practice forest management that sustains forests and all their values for many future generations. What's more, it called for a system of international, scientifically based **criteria and indicators (C&I)**, which would allow governments and other groups to monitor and evaluate forest management practices over time.

The Rio declaration motivated many groups around the world to begin setting and harmonizing C&I at various scales, from global to local. The Canadian Council of Forest Ministers (CCFM) published the Canadian C&I framework in *Defining Sustainable Forest Management: A Canadian Approach to Criteria and Indicators* in 1995. *(For more information, contact: http://nrcan.gc.ca/cfs/pub.)*

A year later, the Ontario Ministry of Natural Resources incorporated some provincial indicators into the *Forest Management Planning Manual for Ontario's Crown Forests.* According to MNR policy advisor Celia Graham, these indicators follow the CCFM criteria but will evolve over time as scientists learn more about evaluating sustainability.

At the forest management unit level, forest industry has been under strong pressure to set standard C&I, so their management practices can be *certified* as being ecologically sustainable. As Brian Nicks of E.B. Eddy Forest Products Ltd. points out, certification has become essential to compete in today's environmentally conscious global market. Over the last 5 months, the Boreal Ecosystem Science Cooperative, a government-industry partnership, has sponsored a series of workshops to help industry develop C&I that will be acceptable to the Canadian Standards Association (CSA) Sustainable Forest Management System or any other certifying body. These workshops, attended by scientists, MNR staff, industrial foresters and others, moved the C&I yardsticks considerably ahead, reports OFRI's Tim Meyer, provincial forest pathologist and chair of the Coop's Board of Directors. However, he, Graham and Nicks agree that when it comes to C&I, we have far more questions than answers.

Similar criteria for sustainable forest management (see box) have been adopted by several governments around the world as well as the CSA. Indicators, however, generate the lion's share of research questions, Graham maintains. Here's just a sample: Can we upgrade forest resource inventories (FRI) to include data on a broader range of ecosystem resources? How do we link national, provincial, regional, and local indicators to ensure we meet criteria at various scales? How can we refine computer models used to

## *The more a seedling glows, the better it grows*

*By Abigail M. Obenchain*

According to OFRI scientists Gina Mohammed and Tom Noland, the more a seedling "glows," the better it will grow after planting in the forest. Mohammed explains that she and her fellow researchers have been giving seedlings "stress tests" (exposing them to heat and low humidity) and then using fluorometers to determine the chlorophyll fluorescence pattern they emit 24 hours later. Later, the seedlings are planted in the forest, and their growth is followed for up to 5 years. Results to date reveal that plants that recover well from the stress tests – as indicated by their "glow" characteristics – also grow better after planting.

Mohammed hopes that these results will allow growers to save time and money by "weeding out" weak batches of seedlings before they leave the nursery or by identifying highly competitive crops. She adds, "Someday we hope to use related fluorescence technology from airplanes to indicate whether an entire forest is under stress." *(See related story about criteria and indicators.)*

A different kind of fluorescence is being used to test tree seeds for viability, says Noland. He explains that they are using a glow-producing chemical called *fluorescein diacetate* to stain tree seed embryos, looking at them under a microscope to see how much they glow, and then testing whether they germinate. They're only a year into this work, but Noland believes that the seeds that glow more, germinate better, and that this test provides quicker, easier-to-interpret results than the current industry standard, which uses a surface stain called *tetrazolium.*

"We hope to make this testing operational in 3 to 5 years", Noland says. "It will help growers to use just the right amount of seed for each batch of seedlings produced." He adds that this test will be particularly useful for species like white pine that take a long time to germinate.

measure or predict indicators to ensure they more accurately reflect the natural world? How do we determine baseline values for indicators? How do we ensure that indicators are affordable to measure and understandable to stakeholders, without sacrificing their scientific validity?

Today, OFRI scientists are working on many projects that will help fill these information gaps.

### *Developing indicators for shoreline ecosystems*

To protect ecological elements and processes that function at finer scales, indicators must be developed at these scales, says OFRI scientist Bill Cole. He is part of a team studying a forest-lake ecosystem in Algonquin Park, to determine how this ecosystem is structured, functions, and is affected by human activities on land.

"Take the lake-dwelling brook trout, which is a socially and economically important gamefish that breeds along the shoreline under very specific conditions," Cole says. "Simply measuring and monitoring the kilometers of protected shoreline is not a precise enough indicator of whether you're sustaining these trout." As a result, his team's projects will reveal whether indicators of shoreline ecosystem sustainability should focus on:

- *Trout breeding shoals*, only 1 or 2 of which may exist in each lake.
- *Groundwater upwellings* or springs that flow down the hillsides and then well up into the shoals. Forest harvesting or other activities on land can affect these springs, which trout require to breed.
- *Woody debris*, which in the study lakes includes logs that are up to 1,000 years old and provides the structural foundation for the shoreline ecosystem. Without this debris, young trout have no cover from predators. Research will reveal what the trout require in the way of log species, size, age, structure and orientation.
- *Narrow strips of conifers around the lakes*, which supply the woody debris. Current FRI maps don't capture these strips, thus to monitor them, FRI must be updated.
- *Land vegetation along the shoreline*, which is important because when it's flooded during early spring, young trout swim among it and feed exclusively on soil microorganisms. How does removing this vegetation affect the trout?

***Project contact:*** *Bill Cole at OFRI.*
***Collaborators:*** *MNR's Aquatic Ecosystems Research Branch and the University of Missouri.*

### *Insects and disease as indicators*

Insects and diseases perform important ecosystem functions: They signal when a forest is under stress; help renew it by removing weaker trees, giving healthy trees more room to grow; and help decompose dead trees, recycling nutrients back into the ecosystem. In a disrupted ecosystem, however, pests can overwhelm the forest, damaging the trees extensively. "In fact," Tim Meyer says, "today insects and disease kill more trees than do harvesting and fire combined."

Because pest infestations are such significant indicators of forest health, Meyer is looking at how pests fit into the ecosystem at all scales, when their effects are positive or negative, and when human efforts to control pests actually do more harm than good.

## *What are criteria and indicators?*

- A **criterion** is a condition or process by which to evaluate sustainable forest management. *Example of a criterion:* Conservation of biodiversity.
- An **indicator** measures the criterion and can be either a numerical measure or a description. *Example of a proposed indicator of biodiversity:* Frequency, distribution and sizes of disturbances (clearcuts and wildfires).

Indicators must be scientifically based; be able to illustrate and predict trends over time; and be evaluated as a group.

## *The 6 criteria for sustainable forest management*

1. Conservation of biological diversity
2. Maintenance and enhancement of forest ecosystem condition and productivity
3. Conservation of soil and water resources
4. Forest ecosystems' contributions to global ecological cycles
5. Multiple benefits to society
6. Accepting society's responsibility for sustainable development

*Source: Canadian Council of Forest Ministers*

"Just knowing the extent of a pest infestation is not a useful indicator of ecosystem health," Meyer maintains. "If we want to make sense of what we're measuring, we need to understand how the pest functions within the ecosystem."

***Project contact:*** *Tim Meyer at OFRI.*

### New tools for evaluating forest condition

For years, OFRI scientists have been developing leading-edge technologies and tests for evaluating the physiological condition of individual tree seedlings. Now they've begun a new project to determine whether physiological condition of an entire forest stand can be assessed remotely using special equipment mounted on airplanes or satellites. If successful, says scientist Gina Mohammed, this project will provide Ontario's resource managers and planners with a practical, physiologically based system of assessing, predicting, and sustaining forest condition in Ontario. It will also help them adjust their management decisions accordingly. For example, if they determine that a mature stand of trees is showing signs of abnormal stress, they can schedule it for harvest before it succumbs to disease or fire.

"This is exciting work, and it will be very useful to addressing the need for criteria and indicators of sustainability, but it also involves some big technical challenges," Mohammed maintains. "Right now we're just in the pilot phase. It will be 3 to 5 years before we have anything operational."

***Other OFRI scientists on this project:*** *Steve Colombo and Tom Noland.* ***Project coordinator:*** *Paul Sampson.* ***Collaborators:*** *The Canadian Forest Service and the Institute of Space and Terrestrial Science at York University.*

### Monitoring at the provincial level

Compliance with Ontario's tree seed zones has been proposed as a landscape-scale indicator for ensuring the genetic diversity of all of Ontario's tree species, and OFRI genetics scientists, in cooperation with the Canadian Forest Service, have created new scientifically based seed zones that will help ensure this compliance. *For more information on these seed zones see* Insights *Vol. 1, No. 1.*

In addition, OFRI's landscape ecology scientists are developing new GIS-based tools to assess sustainability at broader spatial scales. For example, they can be used to monitor changes in forest cover over the entire province or to estimate and predict ecosystem net primary productivity, a key indicator for Criterion #2. *For more information on landscape ecology tools, see page 2 of this issue of* Insights.

## Using site-preparation alternatives to restore a Great Lakes-St. Lawrence conifer forest

*By Jocelyn Watt*

In recent years, using traditional mechanical treatments to prepare harvested sites for planting has been the subject of much scientific debate. Since these treatments remove the organic layer from the forest floor, they can reduce the amount of nutrients available to young trees. According to MNR Bracebridge area forester Dave Deugo, however, the debate on mechanical site preparation "dealt with a lot of fact and a lot of fiction." As a result, he decided to investigate whether alternative site-preparation techniques actually would benefit regeneration. "Traditionally, heavy blading and windrowing are used after harvesting in Great Lakes-St. Lawrence conifer forests," he explains. "I knew there was scientific evidence against blading, but I had actually been having some success using this method. I'd heard of other techniques used in B.C. that mixed the organic layer using high-speed mulching and grinding. It was this 'little B.C. teaser' that gave me the impetus to test other methods."

When he discussed his trial with OFRI regeneration research specialists Bill Parker and John Paterson, they recognized an opportunity for an expanded study that would address a key MNR research priority: rehabilitating the Great Lakes-St. Lawrence (GLSL) forest. "Logging removed the white-pine seed source and effectively eliminated this species on some sites in the second-growth forest," Parker says. "White spruce and tolerant-hardwood species in the understory of the original pine forest were released during logging and formed the second-growth forests now being harvested for spruce. Without silvicultural intervention to return these sites to conifer species, low-quality hardwood forests will develop."

According to Paterson, the traditional heavy blading used to prepare sites in the GLSL region pushes the nutrient-rich upper soil layer into windrows and may reduce early growth of planted species,

slow natural regeneration and degrade site productivity over time. This technique also moves the soil seed bank, causing an uneven distribution of plant species, and may reduce plant diversity.

The current study, known as the Management Impacts Assessment (MIA) Project, has 2 objectives: 1) to assess the ecological effects of alternative site preparation techniques and 2) to develop cost-effective, ecologically sustainable forest management practices for rehabilitating GLSL conifer forest ecosystems. Researchers are assessing:

- Machine efficiency and machine impacts on natural and artificial regeneration
- Seedling ecophysiology
- Microclimate
- Plant diversity
- Site productivity
- Armillaria root disease

The research site, located near the west boundary of Algonquin Park near South River, was clearcut in 1994-95 and prepared for regeneration in summer 1995. The equipment used presented a range of site disturbance characteristics: minimal (control); mulching of the litter, humus and upper soil layer (Meri Crusher; Figure 2); mixing of the humus and upper soil layer (open rake attachment on an excavator); and removal of the humus layer (heavy blading). Some of this equipment had been tested before, but never side by side. To restore the natural conifer species to the site, the area was planted with 2 sizes of white spruce and white pine planting stock in the spring of 1996. Data collected in 1996 is now being analyzed, and although it is premature to draw conclusions, some trends are starting to emerge:

- In white spruce, root biomass increased more on sites where humus remained after treatment (control, Meri Crusher treatments); in white pine, root biomass increased more where humus was removed (heavy blading, excavator treatments).
- White spruce allocated more resources to root growth; white pine resources went to top growth. In both species, top growth was greater where humus was removed (heavy blading, excavator treatments).
- The rate of ingress and total competition differed widely among treatments. All site preparation treatments decreased both foliar cover and plant diversity as compared to the controls.
- The heavy blading treatment, which reduced competing vegetation the most, resulted in greater soil moisture availability but higher maximum daily soil temperatures. Conversely, the non-site prepared areas had the most vegetation, the lowest soil moisture availability, and much lower maximum daily soil temperatures.

"By understanding how management practices affect site microenvironment and plant growth," Paterson maintains, "We will be able to recommend the most appropriate site-preparation option to achieve the desired management objective."

***Project contacts:*** *John Paterson and Bill Parker, OFRI; Dave Deugo, MNR-Bracebridge.* ***Collaborators:*** *Wayne Bell, Steve Colombo, Tim Meyer, Gina Mohammed, Tom Noland, and Paul Sampson at OFRI; South-Central Science & Technology-MNR, North Bay; FERIC, Montreal; CFS-Alberta.*

*Figure 2. The Meri Crusher has traditionally been used for landscaping and agriculture. This small version of the original crusher was developed by Derek Sidders (CFS-Alberta) for use in forest operations in western Canada. The MIA project is the first test of this equipment's site-preparation potential in the Great Lakes-St. Lawrence Forest Region.*

## Briefly . . .

### OFRI to co-host international vegetation management conference:

OFRI and the Canadian Forest Service will co-host the Third International Conference on Forest Vegetation Management, August 24-28, 1998, in Sault Ste. Marie. This meeting will focus on forest vegetation management alternatives, effects of vegetation management on ecosystems, and sustainable forest management. It is expected to draw more than 200 scientists, resource managers, foresters, ecologists, and biologists from around the world.

Through the Vegetation Management Alternatives Program, funded by the Sustainable Forestry Initiative, OFRI became a world leader in vegetation management research during the 1990s. Achievements include:

- *Advancing practical knowledge of vegetation management*, through more than 50 field studies across the province, in partnership with MNR science and technology units, the Canadian Forest Service, universities, and others. Some examples of new knowledge: Traditionally, boreal conifer

seedlings were thought to need far more protection from woody-plant competition than from herbaceous species. However, an OFRI study discovered that failing to control herbaceous competition during the first 2 years after planting can reduce conifer seedling growth by up to 70%. Another study found that the traditional practice of cutting aspen to the ground in the fall actually promotes aspen suckering. To suppress suckering, scientists now recommend cutting between 50 and 100 cm above the ground in July.

- *Using an ecological approach.* The Fallingsnow Project near Thunder Bay is comparing traditional and alternative vegetation control treatments side by side to determine how these treatments affect all ecosystem components. A project near the Sault will reveal which vegetation management techniques can help white pine, Ontario's provincial tree, to regenerate naturally.
- *Building public involvement into research,* through seeking input from environmental groups, conducting an innovative study on how people perceive the risks of various vegetation management tools*, and giving presentations to community groups.
- *Transferring new information and technology.* Over the last 6 years, OFRI vegetation management researchers and their collaborators have produced more than 500 publications and conducted dozens of courses and workshops for resource professionals.

Several OFRI vegetation management studies will be featured in field tours both during and after the conference. For more information:

- Visit http://www.cif-ifc.org/cifweb/ifvmc/ifvmc3.html
- E-mail ifvmc3@nrcan.gc.ca
- Call OFRI at (705)946-2981

Abstracts are due by October 15, 1997.

* *Vegetation Management in Ontario's Forests: Survey Research of Public and Professional Perspectives (available from OFRI)*

### Update on OFRI's future:

An application will soon be made to Ontario's Management Board of Cabinet for approval of a commercial partnership between OFRI and ORTECH Corporation, a company with a 70-year history of researching and developing new technology in many fields, says OFRI program and policy development manager Rich Greenwood.

This partnership would allow OFRI to receive non-governmental funding for projects and to offer its services commercially, thus increasing the return on investment from MNR research and science projects. The Minister of Natural Resources has already approved the partnership; Management Board's decision is expected in the next few months. The partnership and OFRI's commercial potential will be re-evaluated at the end of this 3-year pilot project.

Greenwood emphasizes that under this proposal, the MNR is expected to remain OFRI's primary client for forest science and

## Upcoming Events

**Boreal Science Section-MNR summer/fall workshops:** Contact: Annalee McColm (807)939-3101.

- *Basic Ecological Land Classification Training* (NW Region). Available on request to groups of 8-15.
- *Forest Ecosystem Classification Refresher Course* (NE Region). Available on request to groups of 8-15.
- *Introduction to Moss Identification and Ecology* (NE Region). Aug. 12-13, Timmins.
- *Theory and Practice Associated With Commercial Thinning* (NW Region). Sept., location TBA.
- *Caribou Guidelines.* Sept./Oct., location TBA.

**Other meetings:**

**Aug. 4-8:** *Disturbance in Boreal Forest Ecosystems: Human Impacts and Natural Processes*, International Boreal Forest Research Association, Duluth, Minnesota. Contact: ibfra97@worldweb.net.

**Have a suggestion? Want more information on a research project? We want to hear from you!**

**Contact: *Insights* Editor (or the specific OFRI researcher)**
**Ontario Forest Research Institute**
**1235 Queen Street East**
**Sault Ste. Marie, Ontario P6A 2E5 CANADA**
**Phone: (705) 946-2981 Fax: (705) 946-2030**
**E-mail: ofriin@gov.on.ca**

50808
(1k P.R., 97 06 30)
ISSN 1204-0436